METHODS AND APPARATUS FOR SHARING SLACK
IN A TIME-PARTITIONED SYSTEM

Abstract

In a multitasking system executing real-time harmonic and dynamic tasks having various priority levels, slack is stolen from both timeline and reclaimed slack to enable the execution of high priority non-essential tasks on a best efforts basis. Counts of the amount of slack consumed, slack reclaimed, and periodic compute time consumed are maintained by individual priority level and dynamically updated at certain times. Idle time is calculated by priority level. Available slack is calculated, and slack is allocated and consumed by rate, with the highest rate first and the lowest rate last. Slack is made available to tasks in more than one time partition. All slack belongs to a common system-wide pool of slack obtained from any one or more of the time partitions. Common slack can also be time-shared by static, non-harmonic tasks residing in different time partitions. Also described are a computer system and various methods that perform slack scheduling in a time-partitioned system.